

Turning squash seconds into value-added product

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Fans of spaghetti squash will soon have a new option that is both sustainable and convenient, thanks to major growers [Can-AM Pepper Company](#) and ingenuity provided by the research team at the Canadian Food & Wine Institute (CFWI) Innovation Centre at Niagara College.

The par-baked, frozen spaghetti squash can be prepared in as little as two minutes, and boasts a minimum shelf life of six months. Perhaps more importantly, it's a novel solution for turning food waste into value-added consumer packaged goods.

Can-AM Pepper Company, a fourth generation family-farming operation based in Aylmer, Ontario, is a grower, shipper and packer of more than 40 different vegetables and fruits throughout the Western Hemisphere, with 10,000 acres in Ontario and an additional 10,000 acres throughout the Americas.

In the province, Can-AM Pepper grows 350 acres of spaghetti squash of the 1,680 acre-total of hard squash. While spaghetti squash – classified as a fruit – is identified as a “hard shell squash” in fact, its skin is soft and sensitive, allowing for scarring and staining. While scarring only affects the appearance, there is no harm to the edible insides and its angel hair pasta look when shredded.

However, retailers will reject any cosmetic blemishes. For Can-AM Pepper, the waste of perfectly good fruit represents a whopping 50 percent of its crop, says Donya Litowitz, Product Development Consultant for the company. Although a lot is given to food banks, much of the produce sits on the ground to become compost.

While most other fruits and vegetables with visual skin imperfections (commonly referred to as seconds) are typically sent to food processors to be canned, juiced, dried or used as food ingredients, spaghetti squash is fragile, and is also difficult to process. Conventional processes like steam blanching, for instance, will destroy the strand structure, a major marketing feature for this squash.

In fact, few processed spaghetti squash products are currently on the market due to this challenge; most products use the butternut variety for its higher solids concentration.

The idea to find an innovative solution to stop the significant wastage of its core product was the brainchild of Peter Mead, Vice President, Business Development at Can-AM Pepper, who had met with multiple R&D facilities before being referred to Niagara College, explains Litowitz.

The goal for the students and research lead Robert Lencki, PhD, at the CFWI Innovation Centre, was to create new, value-added solutions from the squash seconds by optimizing processing technologies to provide a shelf-stable product that would maintain the desirable spaghetti-like structure.

The team conducted extensive research throughout the project experimenting with creating frozen products; a dry noodle product; a refrigerated, product; fresh-cut options and also provided options for processing the wasted peels.

The goal was to get an acceptable shelf-life of at least six months, explains Lencki.

“Several processing options were examined, with one giving the best taste and texture,” he says.

Using the computer simulations as a guide, sensory and shelf-life tests were performed on samples that were processed under a range of conditions to determine optimum processing conditions, he explains. Preparation methods appropriate for consumer and food service applications were then developed for the optimized frozen product.

Litowitz says both her company and the CFWI IC research team held bi-weekly status calls throughout the year-long project, collaborating on the development, and pivoting as needed to get to a final sellable product.

“Since our team is spread out between Canada and the U.S., this was very helpful,” she says. “The agendas for the calls and documented follow-up left us with a paper trail of what has occurred and a blueprint for continuing research for future products.”

After analyzing the extensive research, the Can-AM Pepper team experimented in its own test kitchen to create and introduce a frozen spaghetti squash that is pre-peeled, cored, par-baked and ready in minutes.

The product is a low-carb and gluten-free option as a pasta replacement or a side dish with a light buttery and nutty flavour, says Litowitz. It’s also packed with nutrients: it has no saturated fat or cholesterol and is a good source of Vitamin B6, Niacin, Pantothenic Acid, Potassium and Manganese, dietary fiber and Vitamin C.

For consumers and Can-Am Pepper, it is a sustainable product, and a delicious solution to a crop that would otherwise be unprofitable.

The company exhibited at the Produce Marketing Association’s Foodservice Conference and Expo in the U.S. in July. And reactions from industry professionals and leaders have been very positive, says Litowitz, adding the company plans to launch to market within the next month.

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To read more about the inventive new productive development happening at the CFWI Innovation Centre, see the [website](#).